



U.S. DEPARTMENT  
*of* ENERGY

# Highlights of the June 2026 Meeting. Phase I and Phase II proposals.

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EIC and RHIC experiments collaborative tools and technologies II

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    @BrookhavenLab

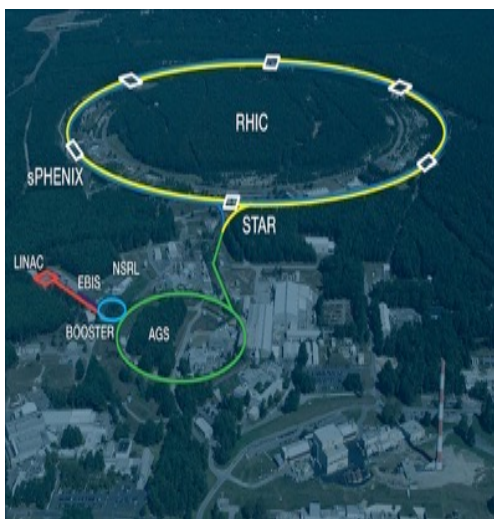
# Acknowledgements

These slides are based on presentations given at the June 2026 [meeting](#) by F. Geurts, J. Lajoe and D. Morrison, as well as comments received from them regarding the straw man proposal.

*All mistakes are mine own*

# RHIC and EIC : The High Energy Frontier of Nuclear Physics

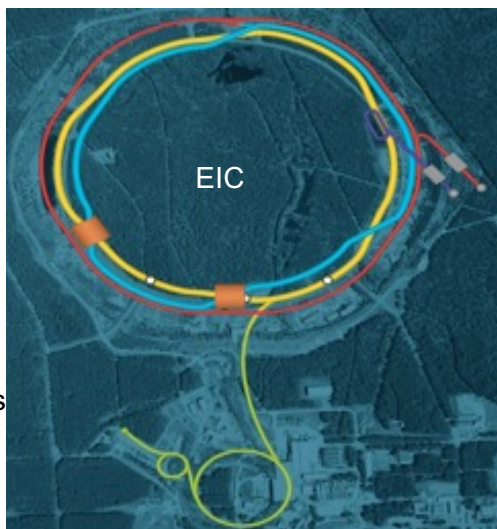
## Relativistic Heavy Ion Collider 2000-2026. Present



- ❑ Located at BNL
- ❑ Large international Community

~2000 collaborators  
~200 Institutes  
~25 Countries

## Electron Ion Collider Est 2036. Future



### Collaborative Tools Commonalities :

- ✓ Experiments rely on collaborative tools to :
  - Manage collaboration itself
  - Communicate with scientific community (distribute work within collaboration and outside)
- ✓ Tools should be used /available by ALL collaborators
- ✓ Tools need to have a long-term future
- ✓ Tools need to work with Authentication & Authorization (AA) policy (many tools need AA and protection)
- ✓ Easy and cheap to maintain and to use
- ✓ Large monolithic approaches disfavored

### Differences :

1. RHIC experiments will continue data processing and analysis for the next 7-10 years
2. The EIC has multiple host labs
3. ePIC needs specific tools for design, construction and commissioning periods (ePIC is flexible and can evaluate modern technologies from the AI era.)
4. ePIC can foresee new needs for the future that previous experiments have not had to deal with

# What tools\* are used in experiments today ?

| Product (Tool) / Experiment                           | ePIC | sPHENIX | STAR |
|-------------------------------------------------------|------|---------|------|
| Phonebook (CRISP) ●                                   | ●    | ●       | ●    |
| {Zoom, Mattermost, Teams}                             | ● ●  | ●       | ●    |
| Drupal ●                                              |      | ●       | ● ●  |
| Indico                                                | ●    | ●       | ●    |
| InvenioRDM ●                                          | ●    | ●       | ●    |
| Mailing lists                                         | ●    | ●       | ●    |
| {When2meet, doodle}                                   | ●    | ●       | ●    |
| Google Docs                                           | ●    | ●       | ●    |
| Overleaf                                              | ●    | ●       | ●    |
| Synch&Share Services :<br>{DropBox, CERNbox, BNLbox●} | ●    | ●       | ●    |
| Jenkins                                               | ●    | ●       | ●    |
| Github/Gitea                                          | ● ●  | ● ●     | ● ●  |
| Webpages                                              | ●    | ●       | ●    |
| Zenodo ●                                              | ● ●  |         | ● ●  |

- – developed or/and supported by experiment
- – supported by host lab(s) license managed by host lab
- – open or/and opensource product
- – host lab product or require host lab development

\* - This list is incomplete, and the products are not in any particular order of priority.

## Plan proposed in June 2026 (ePIC, sPHENIX and STAR Collaborative Tools Strawman proposal\* on next steps) I

- The vision, status and requirements of the experiments, core software developers and BNL Program Development funded project leads were presented on 17 June meeting
- A variety of tools and software developed over several decades, as well as more recent software, were discussed.
- A follow-up discussion was held between the leadership teams of BNL NPPS and SCDF, during which we identified two software packages, namely **CRISP** (also known as the phonebook or membership database) and **Invenio RDM**, as potential services and products to be centrally supported for the RHIC and EIC experiments.
- We propose a two-phase process for transitioning from the current status of the software to a service centrally supported and run.

*\* [Strawman proposal](#)*

## Plan proposed in June 2026 (ePIC, sPHENIX and STAR Collaborative Tools Strawman proposal on next steps) II

**Phase I:** July 2026 onwards, for two to three months.

**Software stack.** Assess the readiness of the existing software stack to be to "packaged and deployed using DevOps practices (continuous integration (CI), automated testing, and reproducible deployment), including automatic builds and tests of new software releases to ensure stability.

- Assess the modularity of the software stack and the specific dependencies of the experiments.

**Resources and efforts.** Assess the short-term and long-term resources and efforts required for the deployment of the above software stack to run as a service.

**Phase I report and Phase II milestones.** A report should be submitted by no later than **September 30, 2026**.

- Progress at the intermediate stage will be reviewed every two weeks at collaborative tools project meetings.
- Develop Phase II milestones and implementation plan

*Report from A.Undrus today*

*The results of Phase I will be reviewed and discussed alongside the experiments in October. If the software stack is deemed ready for use as a service, the proposed Phase II plan and milestones will be discussed and the second phase of the project will begin*

# Feedback on Phase I proposal

- Developers :
  - The range of opinions is wide, from strong support to the view that *'phonebook integration is not reflected in the draft at all, while being a central issue at the moment'*.

*J. Leonardi talk and ITD participation in today's discussion*
- Experiments :
  - CRISP and InvenioRDM, transitioning from a development model to a set of supported services is an important step. It covers two main aspects
  - CRISP and InvenioRDM is a small portion of collaborative tools needed by the experiments
    - ECSJI needs to address a broader range in the future
    - More detailed plan will be needed for Phase II and how experiments will be involved in Phase II process
  - The development and maintenance of CRISP relies on one person.
  - Host labs need to propose a long-term support plan

## Plan proposed in June 2026 (ePIC, sPHENIX and STAR Collaborative Tools Strawman proposal on next steps) III

### Phase II: October 2026 onwards, for six months.

- Packaging of software stacks and continuous integration.
- Production deployment and infrastructure setup, user documentation and/or an Operations Handbook, integration of central authentication and security reviews
- Develop monitoring and dashboards.
- Extend number of tools beyond CRISP and InvenioRDM (DRUPAL is the first candidate)
- Federated ID (also via AmSC IRI)
- Integration between different tools

*Although collaborative tools are important software for experiments, the priorities and needs of experiments are not limited to just them.*

*We expect recommendations and comments from the recent RHIC review at the beginning of October (STAR and sPHENIX priorities will be discussed at weekly management meetings).*

*The ePIC SW&C coordination defined FY27 priorities :*



**Priority for FY27:** Start consolidating a common computing platform for streaming testbeds and production, with collaboration-wide access and stable interfaces to AI services.

Focused scope, ordered:

- **epicprod:** Autonomous system for simulation production in ePIC, based on PanDA and agentic workflows.
- **Hydra:** Common interface for ePIC plots and simulation validation, to be integrated with epicprod.
- **AI-enabled search:** Support onboarding and user learning in ePIC through AI-assisted search across documentation and tutorials.
- **Firebird:** ePIC event display for reconstruction development and outreach.

**Success metric:** Joint infrastructure plan, coordinated with ECSJI, with initial implementation underway.